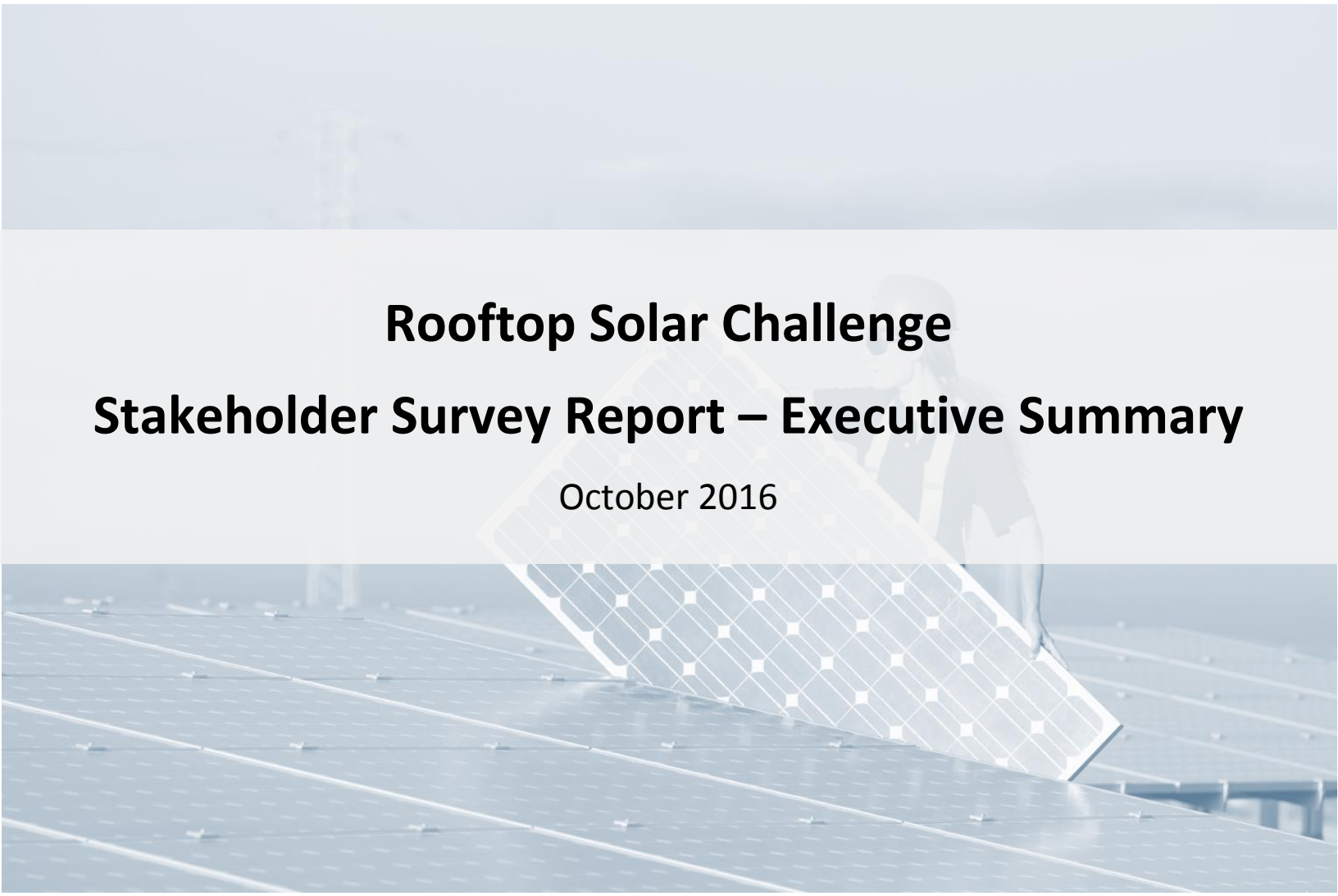

Rooftop Solar Challenge

Stakeholder Survey Report – Executive Summary

October 2016

[bw] RESEARCH PARTNERSHIP

EXECUTIVE SUMMARY

The Massachusetts Department of Energy Resources (DOER), the Massachusetts Clean Energy Center (MassCEC), and the Clean Energy States Alliance (CESA) commissioned a survey of key solar stakeholders in Massachusetts as part of finalization of the U.S. Department of Energy SunShot Initiative Rooftop Challenge II Program. The purpose of the survey and this report is to provide feedback on the impact of the resources and trainings that Massachusetts produced under Rooftop Solar Challenge I and II for applicable stakeholders. The survey and this report also seek to clarify what additional tools, resources, and trainings may be needed to continue to facilitate future solar soft cost reductions and increase consumer awareness, while at the same time support installation quality in the Commonwealth. The primary targets for the research were Massachusetts municipal building and electrical inspectors, solar installers, firefighters and other first responders.

The report is organized into these three major respondent categories. The subsections correspond to the informational sections of the survey. Respondents were asked of their knowledge and the perceived effectiveness of guidance documents and resources developed under Rooftop Solar Challenge I and II, their participation in solar PV technical and safety trainings, to provide feedback on currently available quality assurance resources, and to recommend additional resources and tools to improve quality assurance and decrease soft costs.

Overall, survey results indicate that key solar stakeholders are generally aware of guidance materials offered by Massachusetts through the Rooftop Solar Challenge program, with levels of awareness increasing significantly when asked about specific documents. Of the inspectors and installers who were aware of the guidance materials, between 60 – 85% rated them as somewhat or very effective, depending on the resource document. Resources such as a standard QA checklist template and common installation errors and issues guidance documents were found to be the most effective for building and electrical inspectors as well as solar installers.

Although less than half of inspectors and installers participated in the DOER-sponsored trainings, for those that did participate, the vast majority of respondents found the trainings to be somewhat or very effective. Even with access to these and other technical trainings, a majority of inspectors and installers noted that current code requirements are too complicated. Of the three subgroups surveyed, fire fighters and first responders were least likely to have attended a solar PV fire safety training. As was found with inspectors and installers, fire fighters reported that in general, there are too few solar training opportunities provided.

When asked what permitting standardization techniques were employed in their municipality, some inspectors engaged in efforts that may facilitate solar soft cost reductions, while others did not. Costs associated with permitting and utility interconnection continue to be of concern to installers, who listed their highest non-equipment-related soft cost barrier as “permitting, inspections and interconnection,” in front of “installation and operations labor” and “customer acquisition costs.”

Survey respondents were very receptive to the development of additional resources and trainings, with particular interest from inspectors and installers for a standard inspection quality assurance checklist. Findings indicate that stakeholders consider guidance materials and trainings developed under Rooftop

Solar Challenge I and II to be effective, and show a strong interest for expanded inspector and consumer education resources, and solar PV technical and safety training opportunities.

INTRODUCTION AND METHODOLOGY

DOER actively participated in Rooftop Solar Challenge I starting in 2013, and an expanded Rooftop Solar Challenge II program launched in September, 2013, in partnership with the Clean Energy States Alliance, and four additional New England States. As part of Rooftop Solar Challenge I, DOER's efforts to increase awareness and reduce soft costs associated with solar PV installations were focused both on developing guidance documents associated with permitting and structural review, facilitating community shared solar projects, disseminating utility interconnection information, and conducting outreach to community lending institutions. As part of Rooftop Solar Challenge II, DOER expanded its efforts with municipal inspectors by creating additional permitting resources and model solar zoning documents, and by conducting a series of six in-person solar PV technical and safety trainings for inspectors and solar PV installers across the state and series of webinars on the topic. DOER led a smaller effort to conduct a solar PV fire safety training for firefighters and first responders. In addition, under Rooftop Solar Challenge II, DOER published a series of case studies highlighting four Massachusetts municipalities that have made strides in streamlining their solar permitting processes. DOER also developed solar PV informational resources for installers and consumers, as well as a solar financing initiative that would ultimately become the Mass Solar Loan program. Please see the DOER Rooftop Solar Challenge webpage for more information regarding the specific initiatives, and associated resource documents.

BW Research Partnership was commissioned to perform the research for this survey. The results yielded 339 responses from a mixed methodology that included 74 web participants and 265 phone participants. The use of a phone data collection firm was a highly effective means of reaching out to building and wiring inspectors, compared to asking them to fill out a survey. The survey was fielded from September 13 to September 29, 2016. Telephone data collection was conducted by the Castleton Polling Group in Rutland, Vermont. The margin of error for each chapter is +/-6.92% for inspectors, +/-9.91% for installers, and +/-7.81% for first responders, each at a 95% confidence interval.

The report is organized into these three major respondent categories, while the subsections correspond to the informational sections of the survey. Respondents were first asked to provide their organizational role and then they were questioned on (1) knowledge of resource documents (permitting, zoning, community-shared solar for inspector and education and informational documents for installers); (2) training and education (participation in DOER training as well as general availability and quality of trainings provided); and (3) quality assurance and recommended additional resources and tools to improve quality assurance and decrease soft costs.

KEY FINDINGS BY SEGMENT

MUNICIPAL INSPECTORS

Municipalities would like to see more educational resources and quality assurance checklists. Only 35 percent of municipal inspectors are aware of any guidance documents provided by DOER or MassCEC, and 50 percent reported that there are too few informational materials available to ensure quality solar electric installations. However, when asked on specific documents, the awareness of guidance materials increased significantly. While the majority are involved in permitting processes for solar electric installations, less than a quarter note that they provide consumer education resources or offer inspection checklists and permitting requirements. Accordingly, the resources that received the highest ratings for effectiveness included a standard inspection QA checklist template and a common installation errors and issues guidance document.

Municipalities would also like to see more training opportunities. Of the 42 percent of respondents that have participated in solar PV technical safety trainings or webinars, 95 percent said they were effective. However, 62 percent of respondents noted that there are too few training opportunities to ensure quality workmanship of solar electric installations.

Code requirements need to be clearer to ensure proper solar electric installations. Over half of respondents (53 percent) reported that code requirements are not clear enough.

INSTALLERS

Installers are not satisfied with the quality and quantity of training opportunities. Almost half (48 percent) reported that there are too few training opportunities to ensure quality workmanships of solar electric installations. Furthermore, about four in ten respondents rated inspector trainings to be either "poor" or "very poor" at ensuring quality solar electric installations.

Though mostly satisfied with the amount of informational materials provided, installers are very receptive to any additional resources. Respondents are slightly more likely to find that there are sufficient informational materials compared to municipal inspectors—47 percent said there is just the right amount. But over three-quarters of respondents noted that each of the additional potential resources mentioned would be "very" or "somewhat" effective.

As with municipal inspectors, a QA checklist is the most highly rated potential additional resource. Ninety-six percent of installers reported that a standard inspection QA checklist template would be an effective resource.

Installers are more aware of guidance documents than municipal inspectors, but they find code requirements to be less clear compared to inspectors. When initially asked, sixty-four percent said they are aware of guidance documents compared to just over a third of municipal inspectors. Twenty-eight

percent of installers reported that code requirements are clear enough, compared to 42 percent of municipal inspectors.

Fire Department and First Responders

Firefighters had the lowest participation across the groups surveyed. Only two in ten respondents reported that they have participated in a safety training or webinar hosted by DOER, and these individuals are very satisfied with the training they have attended—95 percent reported it was effective.

Despite low attendance, this group was the most interested in additional training. About three quarters of respondents reported that there were too few training opportunities.

Standard QA checklist templates and in-person fire safety training sessions tops the list for effectiveness. Ninety-six percent of respondents reported that each of these two services would be effective; 93 percent also noted that a regularly updated list of sites with solar PV installations would be effective as well.

Overall Conclusions and Recommendations

Overall, respondents reported high levels of awareness and value for the developed materials and training offered through the Rooftop Solar Challenge Program, with the lowest level of awareness among firefighters and first responders. There appears to be significant appetite for additional training and guidance documents across all stakeholder groups, though the need for additional guidance was especially high with firefighters and other first responders. Unlike with more mature industries that have abundant training opportunities (e.g., financial services, healthcare, etc.), startlingly large percentages of respondents both value existing training and guidance documents as well as seek more information to improve quality and safety.

These findings suggest that the developed materials, especially those targeted to installers and municipal inspectors are valuable additions to the market, and that the methods for deployment were largely successful. For both content and delivery, replicating and expanding these materials and trainings would likely be successful.

Specifically, groups agreed that developing a standard inspection QA checklist is a top priority for the stakeholders, as is clarifying code requirements. Developing additional fire safety training for first responders would seem to be highly valued as well. With these additional training and guidance opportunities and materials, the Commonwealth could improve confidence in the quality of inspections and installations among these key stakeholders.